Volunteer Lake Assessment Program Individual Lake Reports

COBBETTS POND, WINDHAM, NH

MORPHOMETRIC DATA

Watershed Area (Ac.):	2,048	**Max. Depth (m):**	19.2	**Flushing Rate (yr^{1})**	0.4
Surface Area (Ac.):	345	**Mean Depth (m):**	5.2	**P Retention Coef:**	0.8
Shore Length (m):	7,400	**Volume (m^{3}):**	7,208,000	**Elevation (ft):**	177

TROPHIC CLASSIFICATION

Year	Trophic class
1986	MESOTROPHIC
2003	EUTROPHIC

KNOWN EXOTIC SPECIES

Variable Milfoil

The Waterbody Report Card tables are generated from the DRAFT 2014 305(b) report on the status of N.H. waters, and are based on data collected from 2004-2013. Detailed waterbody assessment and report card information can be found at www.des.nh.gov/organizations/divisions/water/wmb/swqa/index.htm

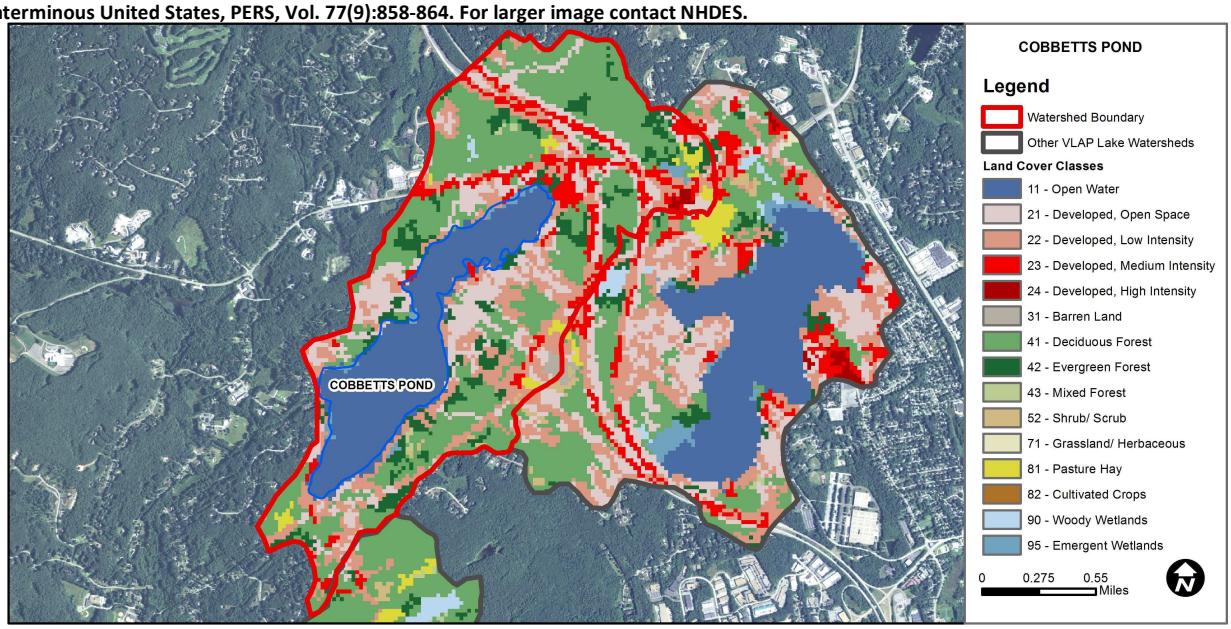
Designated Use	Parameter	Category	Comments
Aquatic Life	Phosphorus (Total)	Slightly Bad	The calculated median is from 5 or more samples and is > indicator and the chlorophyll a indicator is exceeded.
	pH	Good	At least 10 samples with 1 sample but < 10% of samples exceeding criteria.
	Oxygen, Dissolved	Very Good	There are a total of at least 10 samples with 0 exceedances of criteria.
	Dissolved oxygen satura	Slightly Bad	There are >10% of samples (minimum of 2), exceeding criteria.
	Chlorophyll-a	Slightly Bad	The calculated median is from 5 or more samples and is > indicator.
Primary Contact Recreation	Escherichia coli	Cautionary	There are no geometric means and there is one single sample exceedance. More data needed.
	Cyanobacteria hepatoto	Slightly Bad	Cyanobacteria bloom(s).
	Chlorophyll-a	Very Good	There are a total of at least 10 samples with 0 exceedances of indicator.

BEACH PRIMARY CONTACT ASSESSMENT STATUS

COBBETTS POND - TOWN BEACH	Escherichia coli	Bad	There are >=1 exceedance(s) of the geometric mean and/or >=2 single sample criterion exceedances. One or more exceedance is >2X criteria.
COBBETTS POND - DUNKAN BEACH	Escherichia coli	No Data	No data for this parameter.
COBBETTS POND - TOWN BEACH	Cyanobacteria	Slightly Bad	Cyanobacteria bloom(s).

WATERSHED LAND USE SUMMARY

Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, PERS, Vol. 77(9):858-864. For larger image contact NHDES.



Land Cover Category	% Cover	Land Cover Category	% Cover	Land Cover Category	% Cover
Open Water	19.5	Barren Land	0.34	Grassland/Herbaceous	0
Developed-Open Space	14.9	Deciduous Forest	31.57	Pasture Hay	1.44
Developed-Low Intensity	15	Evergreen Forest	7.92	Cultivated Crops	0
Developed-Medium Intensity	7.25	Mixed Forest	0.22	Woody Wetlands	0.14
Developed-High Intensity	0.27	Shrub-Scrub	0.22	Emergent Wetlands	0.9

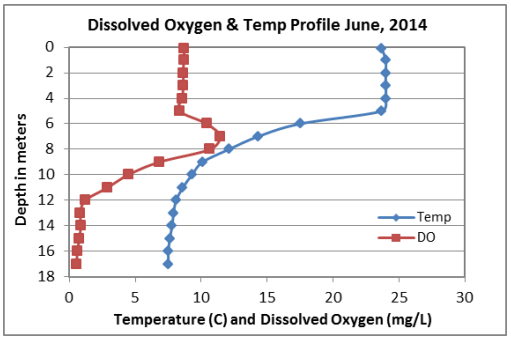
VOLUNTEER LAKE ASSESSMENT PROGRAM INDIVIDUAL LAKE REPORTS

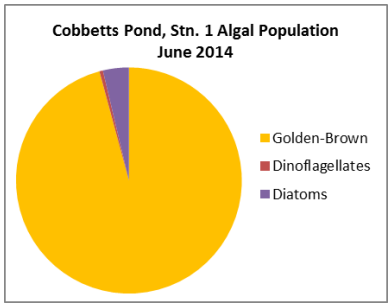
COBBETTS POND, STN. 1, WINDHAM

2014 DATA SUMMARY

OBSERVATIONS AND RECOMMENDATIONS (*Refer to Table 1 and Historical Deep Spot Data Graphics)*

- **CHLOROPHYLL-A:** Chlorophyll levels were slightly above average for the pond and increased slightly from 2013. Historical trend analysis indicates significantly increasing (worsening) chlorophyll since monitoring began.
- **CONDUCTIVITY/CHLORIDE:** Conductivity and chloride continue to be elevated in the lake and tributaries. Deep spot conductivity and chloride were not measured in 2014 due to equipment malfunction; we apologize for this inconvenience. Historical trend analysis, through 2013, indicates significantly increasing (worsening) epilimnetic conductivity since monitoring began. The chloride at Fossa Rd. and Horseshoe Rd. were greater than the state chronic chloride standard indicating potential toxicity to aquatic life.
- **E. COLI:** Town Beach E. coli levels were less than the state standard of 88 cts/100 mL for public beaches on the June sampling event.
- **TOTAL PHOSPHORUS:** Phosphorus was measured at the deep spot utilizing an integrated tube from 7 meters to the surface. The result is representative of epilimnetic phosphorus levels and was utilized for trend analysis. Epilimnetic phosphorus levels increased slightly from 2013 and historical trend analysis indicates significantly increasing (worsening) epilimnetic phosphorus since monitoring began. Phosphorus levels at Fossa Rd. Inlet, Horseshoe Rd. and Mueller St. were elevated. A storm event occurred 24 hours prior to sampling which may have contributed to elevated phosphorus at Fossa Rd.. Mueller Stream elevated phosphorus was likely a result of the elevated turbidity of the sample indicating potential sediment erosion upstream. The elevated phosphorus at Horseshoe Rd. was not the result of elevated turbidity, and the conductivity and chloride were also elevated indicating a pollution source upstream.
- **TRANSPARENCY:** Transparency improved greatly in 2014 and was the best recorded since 2011 which is great news. However, historical trend analysis indicates significantly decreasing (worsening) transparency since monitoring began. We hope to see continued improvement in years to come.
- **TURBIDITY:** Deep spot turbidity was not measured due to equipment malfunction; we apologize for the inconvenience. Tributary turbidity was slightly elevated at Fossa Rd. Inlet and elevated at Mueller Stream. The recent storm event and stormwater runoff likely caused the spike in turbidity at those stations.
- **PH:** Deep spot turbidity was not measured due to equipment malfunction; we apologize for the inconvenience. Historical epilimentic pH trend analysis (through 2013) indicates stable pH with moderate variability between years. Tributary pH levels were sufficient to support aquatic life.
- **RECOMMENDED ACTIONS:** Identify potential source of chloride and phosphorus at the Horseshoe Rd. station. These results were much greater than those measured elsewhere around the pond and may indicate a potential pollution source such as a septic system. Continue to implement stormwater best management practices in the watershed to improve water quality. Continue working with and educating local officials, companies, and residents on utilizing best practices for winter de-icing and encourage the obtainment of a NH Voluntary Salt Applicator License through the UNH Technology Transfer Center's Green SnowPro Certification program. Increase monitoring frequency to better assess seasonal and historical water quality trends. Keep up the great work!





NH Water Quality Standards: Numeric criteria for specific parameters. Results exceeding criteria are considered a water quality violation.
Chloride: > 230 mg/L (chronic)
E. coli: > 88 cts/100 mL – public beach
E. coli: > 406 cts/100 mL – surface waters
Turbidity: > 10 NTU above natural level
pH: between 6.5-8.0 (unless naturally occurring)

NH Median Values: Median values for specific parameters generated from historic lake monitoring data.
Alkalinity: 4.9 mg/L
Chlorophyll-a: 4.58 mg/m^3
Conductivity: 40.0 uS/cm
Chloride: 4 mg/L
Total Phosphorus: 12 ug/L
Transparency: 3.2 m
pH: 6.6

Station Name	Table 1. 2014 Average Water Quality Data for COBBETTS POND								
	Chlor-a ug/l	Chloride mg/l	Cond. uS/cm	E. Coli #/100ml	Total P ug/l	Trans. m		Turb. ntu	pH
						NVS	VS		
Epilimnion	4.80				13	4.75	5.55		
Fossa Rd Inlet		250	974.0		46			2.87	7.10
Horseshoe Rd		420	1475.0		205			1.25	6.92
Mueller Stream		130	571.0		45			14.1	7.38
Outlet		64	328.0		14			0.86	7.14
Town Beach			443.0	38	14			1.40	7.00

HISTORICAL WATER QUALITY TREND ANALYSIS

Parameter	Trend	Explanation	Parameter	Trend	Explanation
Conductivity	Worsening	Data significantly increasing.	Chlorophyll-a	Worsening	Data significantly increasing.
pH (epilimnion)	Stable	Trend not significant; data moderately variable.	Transparency	Worsening	Data significantly decreasing.
			Phosphorus (epilimnion)	Worsening	Data significantly increasing.